

APPENDIX I
Marked-up Version of the Amended Specification

Page 3, beginning line 20:

Specifically, in an MPEG information distribution system, a method according to the invention for forming a transport stream having a bitrate BR and including one or more programs, [the] comprises the steps of: defining N slots within the transport stream, each of the N slots being associated with a respective plurality of non-contiguous transport packets, each of the respective non-contiguous transport packets being separated by N-1 transport packets; and including, within the transport stream being formed, up to N transport encoded programs, where each transport encoded program is associated with one of the N slots and has a bitrate of BR/N; and in the case of less than N transport encoded programs being included within the transport stream being formed, including NULL transport packets within the transport stream being formed, the NULL packets forming NULL programs within the transport stream being formed.

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It should be noted that the number of slots within a transport stream is determined by the relationship between the transport stream clock (i.e., the transport data rate) and the program encoding clocks (i.e., the program data rate). For example, where a transport stream having a 26.97MHz clock rate is used to carry eight programs (i.e., N=8), each program is encoded using a 3.37125MHz clock. In this case, each program to be included in the transport stream is transport encoded using a clock having a frequency of programs that are transport encoded.

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Optional file server 250 is used to store the transport encoded programs streams $T_{\text{PROG1}}-T_{\text{PROGN}}$ for subsequent transport multiplexing and delivery to, e.g., a subscriber in an information distribution system. For example, if a subscriber in the

information distribution system requests a particular movie, the file server 250 retrieves and couples to the transport multiplexer the transport encoded program associated with the particular movie. The transport multiplexer inserts the retrieved program into an appropriate slot within the slotted transport stream for delivery to the subscriber. The subscriber receives information identifying which slot within which slotted transport stream includes the requested movie. The subscriber extracts (and optionally decrypts) the transport packets within the transport stream corresponding to the identified [with identifies] slot such that the transport encoded requested program is received by the subscriber. The received program is subsequently decoded and presented in the appropriate manner on, e.g., the subscriber's television.

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Specifically, a transport stream multiplexer 470 is shown receiving an input transport stream T_{IN} , illustratively a slotted transport stream, and a replacement transport packet (or replacement transport packet stream) R . The transport stream multiplexer 470 receives and examines each packet of the input transport stream T_{IN} . If a received packet is not a NULL packet, then the received packet is coupled to an output as part of an output transport stream T_{OUT} . If a received packet is a NULL packet, and if a replacement packet R is to be inserted into the output stream, then the replacement packet R is inserted into [to] the output as part of the output transport stream T_{OUT} , instead of the NULL packet. In this manner, packets are inserted into the output transport stream T_{OUT} without modifying the previously established timing and distance relationships of the existing packets (i.e., the packets present in the input transport stream T_{IN}).

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The above-described invention provides rapid, cost-effective storage, processing, switching and, generally, delivery of programs to, e.g., a plurality of subscribers. For example, the invention may be utilized within the context of an

interactive digital video on demand (VOD) service known as the OnSet™ system, manufactured by DIVA Systems Corporation of Menlo Park, California. The OnSet™ system distributes audio-visual information to individual subscribers utilizing MPEG information streams. The OnSet™ system also allows subscribers to interactively control the delivery of audio-visual information using consumer-friendly commands, such as fast-forward (FF), rewind (REW), pause (PAUSE), play (PLAY) and the like. Within the context of the OnSet™ system, the invention is used to efficiently utilize an available bandwidth within the system such that a maximal number of subscribers are provided with information (e.g., data, movies and the like) in a relatively fair manner (e.g., bandwidth degradation is felt evenly by all subscribers, not just particular classes of subscribers such as low priority/low bandwidth subscribers.